ENTRANCE TEST (2024)

MDCAT FLP # 6

BIOLOGY

Q.1 It is the master control centre of the endocrine system:
A) Thalamus
B) Hypothalamus
C) Pons
D) Cerebrum

Q.2 All insectivores plants are:
A) True autotrophs
B) True heterotrophs
C) False autotrophs
D) True parasites

Q.3 The pressure receptors that receive deep pressure stimulus in human body are called:
A) Meissner corpuscles
B) Pacinian corpuscles
C) Red blood corpuscles
D) White blood corpuscles

Q.4 Enzymes taking part in synthesis of protein are integral part of:
A) Mitochondrion
B) Chloroplast
C) Ribosome
D) Nucleolus

Q.5 Smooth muscles are innervated by:
A) Central nervous system
B) Peripheral nervous system
C) Somatic nervous system
D) Autonomic nervous system

Q.6 Oviduct in female opens into:
A) Cervix
B) Oviduct
C) Fallopian tube
D) Uterus

Q.7 Which hormone is responsible for promoting milk production in the mammary glands during breastfeeding?
A) Estrogen
B) Progesterone
C) Oxytocin
D) Prolactin

Q.8 Pick up non-allelic recessive sex-linked trait:
A) Diabetes mellitus
B) Vitamin-D resistant rickets
C) Hypophosphatemia
D) Haemophilia A and B

Q.9 Pick up the primary function of myelin sheath:
A) Deactivate the release of neurotransmitter
B) Regulate $Na^+ - K^+$ pumps
C) Increase in size of action potential
D) Increase in speed of conduction

Q.10 Constipation is caused by the excessive absorption of:
A) Water
B) Waste
C) Oxygen
D) Food

Q.11 During sliding of actin filaments, ATP is used for?
A) Cross bridge formation
B) Cross bridge breaking
C) Dragging filaments
D) Shortening of filaments

Q.12 Some insects eat up dead animals and vegetable matter and are called:
A) Scavengers
B) Vectors
C) Predators
D) Pathogens

Q.13 The process of spermatogenesis (formation of sperm) takes place in which part of male reproductive system?
A) Urethra
B) Epididymis
C) Oviduct
D) Seminiferous tubules

Q.14 The complete, mature and infectious particle is known as:
A) Prion
B) Bacteria
C) Virion
D) Viroid

Q.15 T tubule and sarcoplasmic reticulum forms:
A) Muscle fiber
B) T system
C) Triad
D) Z disc

Q.16 Descending aorta is bifurcated into two vessels which on further division from femoral artery that supply blood to high muscles of legs:
A) Iliac vein
B) Iliac artery
C) Temporal artery
D) Sciatic artery

Q.17 Chondrocytes in cartilage are surrounded by non-living matrix of:
A) Muscle
B) Osteocytes
C) Ligaments
D) Collagen

Q.18 If a cofactor is covalently bound to the protein part, it is known as:
A) Coenzyme
B) Prosthetic group
C) Apoenzyme
D) Activator

Q.19 Insulin is antagonist to:
A) ADH
B) Aldosterone
C) Cortisol
D) Thyroxin

Q.20 Which of the following chemicals is used to preserve biological specimens?
A) Formalin
B) Glutaraldehyde
C) Ethylene oxide
D) Iodine

Q.21 The raw material that is used by natural selection for better survival is/are:
A) Variation only
B) Mutation only
C) Similarity only
D) Variation and mutation

Q.22 The lymph serves to:
A) Transport CO_2 to the lungs
B) Transport O_2 to the heart
C) Return the interstitial fluid to the blood
D) Return the WBCs and RBCs to the blood

Q.23 Which of the following is the main point of Darwinism?
A) Over production
B) Variation
C) Disuse of organ
D) Perceived unity of life

Q.24 The red ribbon is a symbol for solidarity with:
A) Cancer patients
B) AIDS patients
C) Hepatitis patients
D) Diabetes patients

Q.25 Red green colour blindness is a recessive sex linked trait that renders individuals unable to distinguish shades of red or green and both appear as:
A) Red
B) Green
C) Gray
D) Yellow

Q.26 Salivary amylase works best at pH:
A) 2:00
B) 6:80
C) 9:00
D) 9:70

Q.27 Only those genes can assort independently whose loci are on:
A) Same chromatids
B) Same chromosomes
C) Non-homologous chromosomes
D) Homologous chromosomes

Q.28 Pick up common character in dihyoxyacetone and fructose?
A) Number of carbon atoms
B) Number of OH groups
C) Aldehyde group
D) Ketonic group

Q.29 Sertoli cells are present in:
A) Epididymis
B) Seminal vesicles
C) Seminiferous tubules
D) Between follicles

Q.30 Cell wall is absent in:
A) Cortex cell
B) Phloem cell
C) Root hair cell
D) Protoplast

Q.31 Phenotype is:
A) The genetic complement i.e. the genes in an individual for a particular trait
B) Partner of gene pair
C) The form of appearance of a trait
D) The position of a gene on the chromosome

Q.32 A female can be hemophiliac, if her parents have following genotype:
A) $X^HX^H \times X^HY$
B) $X^HX^H \times X^hY$
C) $X^HX^h \times X^hY$
D) $X^HX^h \times X^HY$

Q.33 It causes the lining of the uterus to thicken in preparation for the implantation:
A) Progesterone
B) LH
C) Estrogen
D) FSH

Q.34 The number of CO_2, $NADPH_2$ and ATP molecules required to synthesize four glucose molecules from the output of Calvin cycle is respectively:
A) 3, 6, 9
B) 6, 12, 18
C) 12, 24, 36
D) 24, 48, 72

Q.35 The chloroplasts contain:
A) Proteins only
B) Ribosomes only
C) Small circular DNA only
D) Proteins, Ribosomes and small circular DNA

Q.36 Lamarck hypothesized that organisms evolved through the:
A) Migration
B) Inheritance of acquired characteristics
C) Natural selection
D) Mutation

Q.37 Cell wall of prokaryotic cell is composed of:
A) Carbohydrates
B) Carbohydrates and proteins
C) Proteins
D) Proteins and lipids

Q.38 Which is the correct sequence of stages of the menstrual cycle?
A) Follicular phase →ovulation → menstruation→ luteal phase
B) Follicular phase →ovulation → luteal phase→ menstruation
C) Follicular phase → luteal phase → menstruation→ovulation
D) Menstruation→ luteal phase → ovulation →follicular phase

Q.39 The end or complete stop of the menstrual cycle is called:
A) Menstruation
B) Menarche
C) Menopause
D) Conception

Q.40 The average adult human has a lung capacity of approximately:
A) 2 liters
B) 5 liters
C) 9 liters
D) 12 liters

Q.41 ____ is found in the exoskeleton of crabs:
A) Cellulose
B) Chitin
C) Murein
D) Hemi-cellulose

Q.42 Inhibitor which binds tightly and permanently to enzyme and destroys its globular structure and catalytic site is called:
A) Competitive inhibitor
B) Reversible inhibitor
C) Non-competitive inhibitor
D) Irreversible inhibitor

Q.43 Process by which cell takes in dissolved material is called:
A) Endocytosis
B) Phagocytosis
C) Exocytosis
D) Pinocytosis

Q.44 Saliva is basically composed of water, mucus, amylase and:
A) Sodium hydroxide
B) Sodium bicarbonate
C) Sodium chloride
D) Sodium sulphate

Q.45 The plasma membrane of muscle fibre is called:
A) Sarcoplasmic reticulum
B) Sarcomere
C) Sarcolemma
D) Plasmalemma

Q.46 Killing bacteria by some physical agent is called:
A) Sterilization
B) Antisepsis
C) Disinfection
D) Chemotherapy

Q.47 Mitochondria was first seen as granules in:
A) White Blood cells
B) Red blood cells
C) Muscle cells
D) Liver cells

Q.48 The genetic material of HIV consists of:
A) Two identical strands of DNA
B) Two identical strands of RNA
C) Two non-identical strands of DNA
D) Two non-identical strands of RNA

Q.49 The major enzymes involved in transfer of phosphate group from ATP to glucose is:
A) Isomerase
B) Dehydrogenase
C) Kinase
D) Decarboxylase

Q.50 The lipids that do not contain fatty acids are:
A) Waxes
B) Phospholipids
C) Triglycerides
D) Steroids

Q.51 The conjugated molecule that is primarily present in egg albumin is:
A) Lipoprotein
B) Nucleoprotein
C) Glycolipid
D) Glycoprotein

Q.52 The companion cell and sieve tube are in communication with each other by:
A) Gap junction
B) Plasmodesmata
C) Lenticels
D) Pits

Q.53 Which one of the following affects the gene frequency of small populations?
A) Reproductive isolation
B) Natural selection
C) Genetic recombination
D) Genetic drift

Q.54 In human heart, the left atrium receives:
A) The superior vena cava
B) The inferior vena cava
C) The coronary sinus
D) The four pulmonary veins

Q.55 Which is the major event in electron transport chain?
A) ATP synthesis
B) Decarboxylation
C) Substitution
D) Isomerisation

Q.56 In chemiosmosis the proton (H^+) pumps moves from:
A) Stroma to lumen
B) Stroma to cytoplasm
C) Lumen to stroma
D) Cytoplasm to stroma

Q.57 The basic unit of biological information is:
A) Gene
B) Chromosome
C) DNA
D) RNA

Q.58 Which one of the followings also known as primary photosynthetic pigment?
A) Chlorophyll a
B) Chlorophyll b
C) Carotenoid
D) Xanthophyll

Q.59 Ciliated epithelium is present in all of the following, EXCEPT:
A) Trachea
B) Bronchoules
C) Bronchi
D) Alveoli

Q.60 Mammals become dominant in:
A) Cenozoic period
B) Jurassic period
C) Mesozoic period
D) Paleozoic period

Q.61 Which of the following is used in baking?
A) Aerobic respiration
B) Anaerobic respiration
C) External respiration
D) Internal respiration

Q.62 Pick up a storage polysaccharide in animals:
A) Chitin
B) Cellulose
C) Glycogen
D) Starch

Q.63 Test cross is performed to determine the genotype of:
A) F_1 generation
B) F_2 generation
C) P_1 generation
D) F_3 generation

Q.64 Genes which do not obey Mendel's law of independent assortment called:
A) Multiple alleles
B) Linked genes
C) Jumping genes
D) Mobil genes

Q.65 The word hepatitis means inflammation of the:
A) Pancreas
B) Liver
C) Spleen
D) Gall bladder

Q.66 In liver amino acids are converted into glucose, by a process called:
A) Glycogenesis
B) Glycolysis
C) Gluconeogenesis
D) Glycogenolysis

Q.67 Phenomena of staying together of all the genes of a chromosome called:
A) Variation
B) Crossing over
C) Linkage
D) Recombination

Q.68 The opening of larynx is called:
A) Nostril
B) Nares
C) Glottis
D) Epiglottis

CHEMISTRY

Q.69 Match column A (compound) with column B (isomer) and pick the correct matching from the given codes:

Column A (Compound)	Column B (Isomer)
A) 1-Chloropropane	W) Propanal
B) Methoxymethane	X) *trans*-2-Butene
C) Propanone	Y) 2-Chloropropane
D) *cis*-2-Butene	Z) Ethanol

A) A–W, B–Y, C–Z, D–X
B) A–Y, B–Z, C–X, D–W
C) A–Y, B–Z, C–W, D–X
D) A–Z, B–W, C–X, D–Y

Q.70 Petroleum mainly contains saturated hydrocarbons. Which of the following fractions of petroleum contains alkanes in the range of $C_{12}H_{26} - C_{18}H_{38}$?
A) Gasoline
B) Kerosene
C) Gas oil
D) Paraffin

Q.71 Comparison of the properties of electrophile and nucleophile are given in the tabular form. Mark the incorrect statement about them:

Opt.	Electrophiles	Nucleophiles
A)	Are those species which are deficient in electrons	Are those species which are rich in electrons
B)	They are only positively charged	They are only negatively charged
C)	They undergo electrophilic addition and electrophilic substitution reactions	They undergo nucleophilic addition and nucleophilic substitution reactions
D)	It accepts a pair of an electron to form a covalent bond	It donates a pair of an electron to form a covalent bond

Q.72 1,2-Dibromoethane on treatment with Zn dust gives:

A) Alkyne
B) Alkene
C) Alkane
D) All of the above

Q.73 An aqueous solution of compound Q is weakly acidic. When an alkaline solution of Q is shaken with benzoyl chloride, a solid derivative is obtained. What could Q be?

A) $C_6H_5CO_2H$
B) C_6H_5OH
C) $C_6H_5CH_2OH$
D) $C_6H_5NH_2$

Q.74 Comparison of properties of 2,4-directing groups and 3,5-directing groups are given in the tabular form, when they are present in the mono-substituted benzene ring. Mark the incorrect statement about them:

Opt.	2,4-Directing groups (o-,p-Directing group)	3,5-Directing groups (m-Directing group)
A)	They are electron donating groups	They are electron withdrawing groups
B)	They increase reactivity of benzene	They decrease reactivity of benzene
C)	They have lone pair of electrons at the central atom except alkyl group	They have multiple bonds
D)	e.g. $-N(CH_3)_2$, $-NH_2$, $-OH$, $-COR$, $-Cl$, $-Br$, I	e.g. $-N^+R_3$, $-C\equiv N$, $-COOH$, $-CHO$, $-OCH_3$

Q.75 Consider the following statements about Cannizzaro's reaction:

I. Aldehydes which do not have α-hydrogen give this reaction
II. It takes place in the presence of 40% NaOH solution
III. It is self-oxidation reduction.
IV. In this reaction one molecule of aldehyde is reduced to an alcohol and other is oxidized to carboxylic acid in the salt form.

Which of the above given statements is incorrect?

A) I only
B) II only
C) III and IV only
D) I, II, III and IV

Q.76 In which compound is the carbon-halogen bond hydrolyzed most readily by aqueous sodium hydroxide?

A) CH_3CH_2F
B) CH_3COBr
C) CH_3CH_2Cl
D) C_6H_5Br

Q.77 By convention a peptide having molecular mass up to 10,000 is called:

A) Peptide
B) Polypeptide
C) Protein
D) Dipeptide

Q.78 The process of heat flow between hotter and colder gases remains continued until all the molecules have equal:

A) Average translational kinetic energy
B) Average rotational kinetic energy
C) Average translational potential energy
D) Average vibrational kinetic energy

Q.79 The gecko, a small lizard, can climb up a smooth glass window. The gecko has millions of microscopic hairs on its toes and each hair has thousands of pads at its tip. The result is that the molecules in the pads are extremely close to the glass surface on which the gecko is climbing. What is the attraction between the gecko's toe pads and the glass surface?

A) Co-ordinate bonds
B) van der Waal's forces
C) Ionic bonds
D) Covalent bonds

Q.80 Which of the following statements is incorrect about homogeneous and heterogeneous catalysis?

Opt.	Homogeneous catalysis	Heterogeneous catalysis
A)	In this process, the catalyst and reactants are present in the same phase.	In this process, the catalyst and reactants are present in different phases.
B)	They have high activity.	They have low activity.
C)	Expensive and difficult to recycle.	Readily regenerated and recycled.
D)	Their separation is easy.	Their separation is difficult.

Q.81 When two lone pairs and two bond pairs are around the central atom, decrease in the bond angle is up to

A) 109.5° C) 102°
B) 104.5° D) 107.5°

Q.82 The unit of k in first order reaction is:

A) s^{-1} C) moles dm^{-3}
B) moles $dm^{-3}s^{-1}$ D) $mol^{-1}dm^3$

Q.83 Formula of Tetraamminechloronitroplatinum (IV) sulphate is:

A) $[PtCl(NO_2)(NH_3)_4]SO_4$ C) $[PtCl_2(NO_2)(NH_3)_4]SO_4$
B) $[PtCl(NO_2)(NH_3)]SO_4$ D) $[PtCl(NO_3)(NH_3)_4]SO_4$

Q.84 Match column I with column II and pick the correct matching from the given codes:

Column I	Column II
A) Propanone	**W) Benzaldehyde**
B) C_6H_5CHO	**X) Acetone**
C) Benzophenone	**Y) Methyl ethyl ketone**
D) Butanone	**Z) Diphenyl ketone**

A) A–X, B–W, C–Z, D–Y C) A–Y, B–W, C–Z, D–X
B) A–Y, B–Z, C–X, D–W D) A–Z, B–W, C–X, D–Y

Q.85 Which of the following compounds on hydrolysis gives ethyne?

A) Al_4C_3 C) CaC_2
B) Mg_2C_3 D) Cu_2Cl_2

Q.86 The phenoxide is more stable than ethoxide ion because:

A) Lone pair on oxygen atom overlaps with the delocalized π-bonding system in benzene
B) Oxygen atom is directly bonded with benzene ring in phenoxide ion
C) The negative charge is localized on oxygen atom of phenoxide ion
D) The negative charge is delocalized on oxygen atom ethoxide ion

Q.87 "No two electrons in an atom can have same set of four identical quantum numbers." It is the statement of:

A) Aufbau principle C) Hund's rule
B) Pauli's exclusion principle D) None of these

Q.88 $Ca(OH)_2$ is sparing soluble having solubility value 32×10^{-6}. What will be its solubility?

A) 1.5×10^{-2} C) 1.0×10^{-2}
B) 2.0×10^{-2} D) 3.0×10^{-2}

Q.89 Electrolysis of a dilute solution of sodium chloride results in the cathode product:

A) Sodium C) Hydrogen
B) Chlorine D) Oxygen

Q.90 Identify the incorrect statement about isotopes of an element:

A) They have same atomic number
B) Term mass number is used for their masses
C) Mass number of isotopes of an element is determined by comparison with C-12 in the mass spectrometer
D) Isotopes do not occur in nature

Q.91 Which one of the following statements is true about $Ca(OH)_2$

A) It is not used in the preparation of bleaching powder
B) It is acidic in nature
C) It is used in chromatography
D) Its solution in water is called lime water

Q.92 Which of the following functional groups does not match correctly with its name?

A) $-NH_2$ ... Amino group
B) $-C \equiv N$ ... Cyano group
C) $SH-$ ... Mercapto group
D) $\diagdown C = O$ ... Carboxy group

Q.93 Ethene is treated with alkaline $KMnO_4$ solution. The major product obtained is:

A) 1,2-Ethanediol
B) 1,2-Propanediol
C) Ethanal
D) Propanal

Q.94 The maximum number of electrons that can be accommodated in an orbit is according to the formula:

A) 2n
B) $2n^2$
C) n^2
D) 2n + 1

Q.95 The coordination number of Fe in $K_4[Fe(CN)_6]$ is:

A) 4
B) 5
C) 3
D) 6

Q.96 1-Butyne can be distinguished from 2-Butyne by using:

A) Baeyer's reagent
B) Chlorine in CCl_4
C) Tollen's reagent
D) Bromine in CCl_4

Q.97 Which of the following biomolecules acts as specific catalysts in biological reactions?

A) Carbohydrates
B) Lipids
C) Vitamins
D) Enzymes

Q.98 The decrease in the solubility of an electrolyte in a solution by adding another electrolyte having common ion is called common ion effect. Common ion effect has all of the following characteristic properties EXCEPT:

A) It is application of Le-Chatelier's principle
B) Its effect is always in the reverse direction
C) The solubility of second electrolyte is always greater than that of first one
D) The term electrolyte, acid or salt is used for common ion effect

Q.99 What will be the product (X) in the given reaction?

$$C_2H_5OH + CH_3 - COOH \underset{}{\overset{\text{conc. } H_2SO_4}{\rightleftharpoons}} X + H_2O$$

A) Diethyl ether
B) Methyl propyl ether
C) Ethyl acetate
D) Butyl alcohol

Q.100 Which one of the followings has same number of molecules as present in 11g of CO_2?

A) 4.0g of O_2
B) 4.5g of H_2O
C) 4.0g of O
D) ¼ moles of NaCl

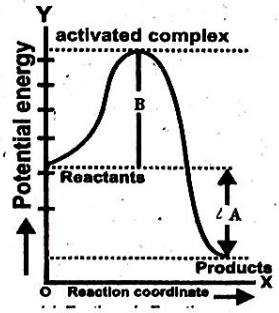
Q.101 If Z is the number of protons and A is the number of nucleons, then the number of neutrons in an atom is given by:

A) A + Z
B) Z – A
C) A – Z
D) None of these

Q.102 What is pH of buffer in which concentrations of salt and base are 0.1M and 0.01M respectively ($pK_b = 4.0$)?

A) 3.0
B) 2.0
C) 9.0
D) 11.0

Q.103 An energy diagram is shown below:



What is activation energy for the exothermic reverse reaction?

A) A
B) A – B
C) A + B
D) B

Q.104 For the purification of copper, impure copper is made of_____:
A) Cathode
B) Anode
C) Solution
D) Both A and B

Q.105 Which among the following is the correct order of increasing ionic radius?
A) $Al^{+3} < Na^{+1} < Mg^{+2}$
B) $Al^{+3} < Mg^{+2} < Na^{+1}$
C) $Na^{+} < Mg^{+2} < Al^{+3}$
D) $Mg^{+2} < Al^{+3} < Na^{+1}$

Q.106 Catalytic reduction of aldehydes and ketones forms:
A) Alcohol
B) Carboxylic acid
C) Alkene
D) Aldehyde

Q.107 During the S_N1 reaction, the fast reaction involves:
A) Breakage of covalent bond
B) Formation of carbocation
C) Transition state
D) Attack of a nucleophile

Q.108 Ethyl butyrate has flavour like:
A) Banana
B) Pineapple
C) Jasmine
D) Orange

Q.109 Which of the following compounds has lowest boiling point?
A) Water
B) Hydrogen sulphide
C) Ethanol
D) Acetic acid

Q.110 Mark the correct statement:
A) Diamond is an example of molecular solids
B) Triclinic unit cell has the highest symmetry
C) In NaCl structure, the number of formula units per unit cell is four
D) A body centered cubic structure has coordination number 12

Q.111 The rate laws for certain enzyme-activated reactions in your body has a specific rate constant (k), with units of $moldm^{-3}s^{-1}$. What is the overall order of these reactions?
A) 0
B) 1
C) 2
D) Cannot be determined

Q.112 A researcher has prepared a sample of 1-Bromopropane from 10g of 1-Propanol. After purification he had made 12g of product. Which of the following is percentage yield? (A_r = C = 12, H = 1, O = 16, Br = 80)
A) 60.5%
B) 58.5%
C) 90.3%
D) 50.6%

Q.113 Among the following species, identify the isostructural pairs, NF_3, NO_3^-, BF_3, H_3O^+, NH_3
A) $[NF_3, NO^-_3]$ and $[BF_3, H_3O^+]$
B) $[NF_3, H_3O^+]$ and $[NO^-_3, BF_3]$
C) $[NF_3, NH_3]$ and $[NO_3^-, H_3O^+]$
D) $[NF_3, H_3O^+]$ and $[NH_3, BF_3]$

Q.114 All of the following elements have the most stable oxidation states EXCEPT:

Opt.	Element	Electronic Configuration	Most stable oxidation states
A)	Sc	$[Ar]3d^14s^2$	+3
B)	Fe	$[Ar]3d^64s^2$	+3
C)	Cr	$[Ar]3d^54s^1$	+6
D)	Mn	$[Ar]3d^54s^2$	+5

Q.115 Elements in the modern periodic table are arranged in ascending order of their:
A) Atomic mass
B) Proton number
C) Mass number
D) Nucleon number

Q.116 The formula which shows the simplest whole number ratio for the atoms of different elements in a compound is:
A) Ionic formula
B) Structural formula
C) Empirical formula
D) Molecular formula

Q.117 The spontaneous change of liquid molecular into vapour in an open container as a give temperature is called an evaporation. Which of the following factors affect evaporation?
A) Temperature
B) Intermolecular forces
C) Surface area
D) All of these

Q.118 The E^o value of standard copper half-cell is +0.34V, which is measured when it is connected with SHE i.e. standard hydrogen electrode. In this case the half reaction taking place at SHE is:

A) $2H^+_{(aq)} + 2e^- \rightarrow H_{2(g)}$
B) $H_{2(g)} \rightarrow 2H^+_{aq} + 2e^-$
C) $2H^-_{(aq)} + 2e^- \rightarrow 2H_{(g)}$
D) $H_{2(g)} \rightarrow 2H_{(g)} + 2e^-$

Q.119 The compound which has cis-trans isomers is:

A) 1,1-Dichloroethene
B) 1,2-Dichloroethene
C) 1-Butene
D) 1-Pentene

Q.120 $CH_3 - CH_2 - OH + PCl_5 \longrightarrow CH_3 - CH_2Cl + POCl_3 + HCl$

Formation of HCl is test for the presence of _____ in a compound:

A) Alkyl group
B) Hydroxyl group
C) Saturated alkyl group
D) Acid H^+ ion

Q.121 56g of N_2 will at STP occupy the volume of:

A) $22.41 dm^3$
B) $44.82 dm^3$
C) $44.82 cm^3$
D) $2.241 dm^3$

Q.122 Which of the following have maximum bond angle?

A) NF_3
B) NH_3
C) BF_3
D) H_2O

PHYSICS

Q.123 The ratio of electric field intensity due to an infinite sheet of charge and two parallel oppositely charged plates is (for the same value of charge densities):

A) 1:2
B) 2:1
C) 2:3
D) 3:2

Q.124 When a charge -q enters perpendicularly to electric field E, the electric force experienced is:

A) qE and along the field
B) qE and opposite to the field
C) qE and perpendicular to the field
D) Zero

Q.125 Capacitance of a parallel plate capacitor can be increased by:

A) Increasing the distance between the plates
B) Increasing the thickness of the plates
C) Decreasing the thickness of the plates
D) Decreasing the distance between the plates

Q.126 The process in which the molecules of the dielectric materials between the plates of the capacitor form dipoles is known as:

A) Induction
B) Rectification
C) Polarization
D) Ionization

Q.127 A fan is rotating at an angular speed of 300 revolutions per minute. What is its angular speed in radians per second?

A) 5π radian per second
B) 10π radian per second
C) 15π radian per second
D) 25π radian per second

Q.128 If a wheel of radius "r" turns through an angle of 30°, then the distance through which any point on its rim moves is:

A) $\frac{\pi}{3} \times r$
B) $\frac{\pi}{6} \times r$
C) $\frac{\pi}{30} \times r$
D) $\frac{\pi}{2} \times r$

Q.129 At constant conductance, the applied voltage across the conductor is:

A) Inversely proportional to current
B) Directly proportional to current
C) Not related to current
D) Exponentially related with current

Q.130 The energy consumed in 1 kilowatt electric heater in 30 seconds will be:

A) 6×10^2 J
B) 9.8×10^6 J
C) 4.99×10^7 J
D) 3×10^4 J

Q.131 Field inside a solenoid is:

A) Directly proportional to its length
B) Directly proportional to current
C) Inversely proportional to total number of turns
D) Inversely proportional to current

Q.132 A current flow in a conductor from east to west. The direction of the magnetic field at a point above the conductor is:

A) Towards north
B) Towards east
C) Towards south
D) Towards west

Q.133 An α-particle is accelerated through a potential difference of 10^4 V. The gain in kinetic energy of the α-particle is:

A) 2×10^{-4} eV
B) 2×10^{4} J
C) 2×10^{4} eV
D) None of these

Q.134 A uniform wire of length 5 m is carrying a steady current. The electric field inside is 0.2 V/m. The potential difference across the ends of the wire is?

A) 1 Volt
B) 0.5 Volt
C) 0.1 Volt
D) 5 Volt

Q.135 The distance between the plates of a parallel plate capacitor is 2.0 mm and area of each plates is 2.0 m^2. A potential difference of 1.0×10^{-4} V is applied across the plates. Find the capacitance:

A) 4×10^{4} F
B) 3.54×10^{9} F
C) 8.85×10^{-9} F
D) 9.0×10^{-4} F

Q.136 During the discharging of a capacitor at t=RC, the remaining charge on the plate of the capacitor is:

A) 63% of the total
B) 37% of the total
C) 100%
D) 87% of the total

Q.137 Angular velocity is defined as:

A) The rate of change of linear velocity
B) The rate of change of angular displacement
C) The rate of change of angular acceleration
D) The rate of change of linear displacement

Q.138 A stone tied to a string is rotated in a circle. If the string is cut, the stone flies away from the circle because:

A) A centrifugal force acts on the stone
B) A centripetal force acts on the stone
C) Of its inertia
D) Reaction of the centripetal force

Q.139 Which of the following has a negative temperature coefficient?

A) C
B) Mn
C) Fe
D) Ag

Q.140 You are given three bulbs of 25, 40 and 60 watt. Which of them has the lowest resistance?

A) 25 watt bulb
B) 60 watt bulb
C) 40 watt bulb
D) Information is insufficient

Q.141 The birds sitting on an overhead transmission line suffer no harmful effect because:

A) Their bodies have high resistance
B) Their feet are very good insulators
C) There is no potential difference between their feet
D) All of these

Q.142 A charged particle enters a magnetic field B with its initial velocity making an angle of 45° with B. The path of the particle will be:

A) A straight line
B) An ellipse
C) A circle
D) A helix

Q.143 A stationary wave is formed in a pipe which is open at both ends. If two complete loops are formed and the wavelength of the wave is 20 cm, what is the length of the pipe?

A) 5 cm
B) 10 cm
C) 15 cm
D) 20 cm

Q.144 For a simple harmonic oscillator, the relation between acceleration and displacement is:

A) $a \propto x^2$
B) $a \propto -x$
C) $a \propto \frac{1}{x^2}$
D) $a \propto -\frac{1}{x^2}$

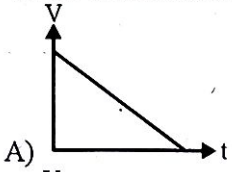
Q.145 A body is released from a height of 20 m. If friction is ignored then its velocity just before striking the ground will be ($g = 10\ m\ s^{-2}$):

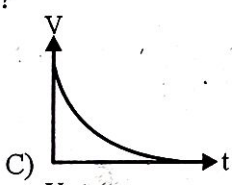
A) 5 m s^{-1}
B) 15 m s^{-1}
C) 10 m s^{-1}
D) 20 m s^{-1}

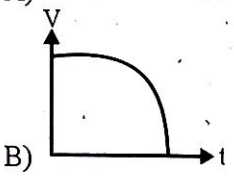
Q.146 If we drop an object, its initial velocity is zero. How far will it fall in time 't'?
A) $9.8\ t^2$
B) $4.9\ t^2$
C) $0.49\ t^2$
D) $98\ t^2$

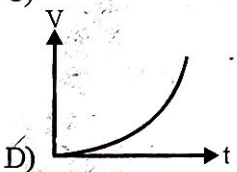
Q.147 A vibrator of frequency 10 Hz produces waves of wavelength 0.25 m in string. The speed of a wave in the string is:
A) $10\ m\ s^{-1}$
B) $5\ m\ s^{-1}$
C) $1\ m\ s^{-1}$
D) $2.5\ m\ s^{-1}$

Q.148 Which of the following is uniform deceleration graph?

A) 

C) 

B) 

D) 

Q.149 When an electron in hydrogen atom jumps from second orbit to first orbit then energy of photon emitted is:
A) 13.6 eV
B) 10.2 eV
C) 3.4 eV
D) 10.2 V

Q.150 In which process the entire of heat supplied to the gas in converted to the internal energy of the gas?
A) Isochoric process
B) Isobaric process
C) Isothermal process
D) Adiabatic process

Q.151 For skin cancer _____ is used:
A) Phosphorus-32
B) Strontium-90
C) Iodine-131
D) May A or B

Q.152 Which of the following effect is observed due to emission of β^- during the phenomenon radioactivity?
A) A increases by 1 and Z remain same
B) Z increases by 1 and A remains same
C) Z decreases by 1 and A remains same
D) A decreases by 1 and Z remains same

Q.153 If we take away south-pole of a bar magnet from a coil then the end of coil facing south-pole act as:
A) A north pole
B) May be north or south
C) A south pole
D) No pole will be induced

Q.154 A ball is released from certain height, falls under the action of gravity. The distance travelled by ball after 8 s will be:
A) 64 m
B) 98 m
C) 434.5 m
D) 313.6 m

Q.155 Which one is not the effect of low-level radiation?
A) Loss of hair
B) Eye cataracts
C) Ulceration
D) Drop in white blood cells

Q.156 What is the atomic number and mass number of helium?
A) 4, 2
B) 2, 4
C) 4, 4
D) 3, 4

Q.157 Work done on a body is said to be half of maximum if the angle between force acting on it and displacement covered by it is:
A) 0°
B) 90°
C) 45°
D) 60°

Q.158 Circuit used to convert pulsating D.C into pure D.C is called:
A) Rectifier
B) Filter
C) Inverter
D) Converter

Q.159 The height of projectile will be equal to one-fourth of its horizontal range if the angle of projection of projectile is:
A) 45°
B) 30°
C) 60°
D) 76°

Q.160 At what angle of projection of a projectile the range becomes $\frac{\sqrt{3}}{2}$ times of its maximum value?

A) 15°
B) 20°
C) 30°
D) 40°

Q.161 A source initially contains N_o nuclei of a radioactive nuclide. How many of these nuclei have decayed after a time interval of six half-lives?

A) $\frac{N_o}{16}$
B) $\frac{31N_o}{32}$
C) $\frac{N_o}{32}$
D) $\frac{63N_o}{64}$

Q.162 A half-wave rectifier is being used to rectify an alternating voltage of frequency 55 Hz. The number of pulses of rectified current obtained in two seconds are:

A) 55
B) 25
C) 110
D) 220

Q.163 Which one of the following properties is not exhibited by the longitudinal waves?

A) Interference
B) Reflection
C) Diffraction
D) Polarization

Q.164 The photoelectric effect is not possible with ____ photons:

A) X-rays
B) Ultraviolet
C) Gamma rays
D) Beta rays

Q.165 The basic working principle of an A.C generator is:

A) To convert light energy into electrical energy
B) To convert electrical energy into mechanical energy
C) Mutual induction
D) Faraday's law of electromagnetic induction

Q.166 The net force on a uniformly accelerated body is:

A) Increasing
B) Decreasing
C) Zero
D) Constant

Q.167 An ideal step-down transformer is the one which:

A) Increases voltage level
B) Increases current level
C) Decreases power level
D) Decreases frequency level

Q.168 Which photon carries the least energy?

A) Blue
B) Violet
C) Red
D) Green

Q.169 A gas expands by 0.5 m^3 at constant pressure of 10^5 N m^{-2}. The work done is:

A) 5.0 erg
B) 500 kJ
C) 50 kJ
D) 10.0 J

Q.170 In stationary wave, the distance between adjacent antinodes is equal to:

A) $\frac{\lambda}{2}$
B) λ
C) $\frac{3\lambda}{4}$
D) $\frac{\lambda}{4}$

Q.171 An object is moving with a velocity of 40 m s^{-1} such that a constant force acts on it of 7.5N. What must be the power developed in this case?

A) 2.7 W
B) 5.8 W
C) 150 W
D) 300 W

Q.172 In a pipe open at both ends we have:

A) Node at one end and Anti-node at other
B) Anti-nodes at both ends
C) Nodes at both ends
D) Can't be predicted

Q.173 The slope of distance — time graph for a moving body will always be:

A) Negative
B) Positive
C) Zero
D) Maximum

Q.174 1 Wh is equal to:

A) 3.6×10^8 J
B) 3.6 MJ
C) 3.6 kJ
D) 3.6×10^3 J

Q.175 1st law of thermodynamics in case of isobaric process is:

A) $C_P\Delta T = P\Delta V$
B) $C_P\Delta T = C_V\Delta T + P\Delta V$
C) $C_V\Delta T = C_P\Delta T + P\Delta V$
D) $C_P\Delta T = C_V\Delta T - P\Delta V$

Q.176 According to Lenz's law the direction of induced current is such that it:

A) Decreases flux if it is increasing
B) Opposes the cause which produces it
C) Increases flux if it is decreasing
D) All of these

ENGLISH

Directions: Read each sentence and determine the meaning of the word using cross sentence clues or your prior knowledge.

Q.177 With so much negative feedback, the owner had to consider a(n) _____of his new dress code.

A) Isolation
B) Interference
C) Inspiration
D) Repeal

Direction: Choose the option of the best meaning for the underlined word as it is used in context.

Q.178 There was a <u>commotion</u> among the sheep when the dog broke loose from its leash.

A) Armistice
B) Goodwill
C) Hullabaloo
D) Tranquility

Directions: Choose the most suitable answer that identifies the homophones in the sentence.

Q.179 The elliptical shaped edge or the _____ dryer kept overheating and caused me to burn my finger.

A) Hair
B) Hare
C) Here
D) Air

Q.180 Find out the correct meaning of underlined idiomatic expression.

Don't **<u>hold it against</u>** me if you can't solve this problem. I've tried to help you as well as I could.

A) Blame
B) Fight
C) Take sides
D) Gossip

Direction: Choose the word that is most nearly <u>SIMILAR</u> in the meaning of the following word.

Q.181 INIQUITY

A) Inequality
B) Injustice
C)Wickedness
D) Efficiency

Directions: Choose the word that is most <u>OPPOSITE</u> in the meaning of the following word.

Q.182 FECKLESS

A) Useless
B) Careless
C)Dauntless
D) Expedient

Directions: Choose the correct spelling:

Q.183

A) Counterfeit
B) Counterfaite
C) Counterfyit
D) Conterfeit

Directions: Fill in the blank with appropriate option:

Q.184 For a developed country, more people _____ greater asset but for developing countries _____ a liability.

A) means ..... it is
B) mean ..... it is
C) means ..... they are
D) mean ..... they are

Q.185 More than anything, my mother wants my father to serenade her by singing her favorite song _____their anniversary dinner.

A) on
B) at
C) to
D) for

Q.186 I've been considering _____the sport of horseback riding.

A) taking after
B) taking up
C) taking to
D) taking down

Directions: Identify the underlined word or phrase that contains a mistake and needs to be changed to make the sentence correct.

Q.187 The shy student slowly (A) rose (B) her hand up just high enough (C) so that (D) her teacher could see she knew the answer.

Q.188 (A) If they know the cause of the problem, /(B) they might be able to figure on /(C)how to prevent/(D) it happening again.

Directions: Pick the correct option.

Q.189

A) They're paying us a visit, because they haven't seen us in a while.
B) They're paying us a visit because they haven't seen us in a while.
C) They're paying us a visit; because they haven't seen us in a while.
D) They're paying us a visit: because they haven't seen us in a while.

Q.190

A) The people who lost theirs dogs stayed in their yards, hoping they would return.
B) The people who lost their dogs stayed in their yards, hoping the dogs would return.
C) The people whom lost their dogs stayed in their's yards, hoping they would return.
D) The people whose lost their dogs stayed in them yards, hoping the dogs would return.

Q.191

A) Educated at Aitchison and then at GC Lahore, it was surprising that Furqan could not get into a decent business school.
B) Educated at Aitchison and then at GC Lahore it was surprising that Furqan could not get into a decent business school.
C) Educated at Aitchison and then at gC Lahore, it was surprising that Furqan could not get into a decent business school.
D) Educated at Aitchison and then at GC Lahore, Furqan surprisingly could not get into a decent business school.

Q.192

A) The capital city of the United States Is not New York, and is it Los Angeles.
B) The capital city of the United States Is not New York, nor is it Los Angeles.
C) The capital city of the United States Is not New York, yet is it Los Angeles.
D) The capital city of the United States Is not New York, or is it Los Angeles.

Directions: Read the passage and answer the questions below.

Ah! whatever could be said was said. All held him guilty, even his own mother who claimed to understand him the best. All had betrayed him in his hour of need. Yet, there he was, still with a sparkling hope and knew that the truth must prevail. In the cold, dark and damp cell he never for a moment lost faith in God and goodness and was waiting anxiously for an angel to come, plead non guilty for him and free him of his miseries.

Q.193 Three of the following statements indicate that he had a sparkling hope. Which statement does not?

A) He had never lost faith in God
B) He was sure there was goodness
C) He could have evidence in his favour
D) He knew that truth must prevail

Q.194 Whatever others said about him, he

A) Betrayed no one
B) Thought over the problem
C) Never lost faith in goodness
D) Raised his voice against injustice

LOGICAL REASONING

Q.195 Tanveer has more fun than Jahanzaib. Farukh has less fun than Jahanzaib. Tanveer has more fun than Farukh. If the first two sentences are true, the third is _____.

A) False
B) True
C) Uncertain
D) Unresolved

Q.196 BRAIN' is related to 'MEMORY' similarly 'BANK' is related to

A) Diagram
B) Nest
C) Money
D) None of the above

Q.197 Statement

I. All fruits are textbooks.
II. All pens are textbooks.
III. All textbooks are rains.

Conclusion

I. All fruits are rains.
II. All pens are rains.
III. Some rains are textbooks.

A) Only I follows
B) Only II follows
C) Only III follows
D) All follow

Q.198 Statement: Will the newly appointed principal maintain discipline?

Arguments:

I. Yes, he has to; otherwise his existence as principal will be in danger.
II. No, this principal had discipline issues in his earlier postings.

A) Only argument I is strong.
B) Only argument II is strong.
C) Either I or II is strong.
D) Both I and II are strong.

Q.199 Statements: $N \geq O \geq P = Q > R$

Conclusions:

I. $N > R$
II. $R = N$

A) Only conclusion I is true
B) Only conclusion II is true
C) Either conclusion I or II is true
D) Both conclusions I and II are true

Q.200 Statement: It is not good to interfere in anyone's private life.

Conclusions:

I. Encroachment in anyone's personal matter is bad.
II. Professional detail does not come under private life.

A) Only conclusion I is valid.
B) Only conclusion II is valid.
C) Either conclusion I or II is valid.
D) Neither conclusion I nor II is valid.